

# MQSUN Research Summary

Research findings at a glance from the MQSUN framework

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## Systematic review of complementary feeding interventions for prevention of undernutrition

Evidence suggests that the effectively implemented provision of complementary feeding and education on complementary feeding have a potential to prevent undernutrition in children less than two years of age in developing countries. However, further research is needed to identify the most beneficial types of complementary food, as well as how to tailor interventions to meet the specific needs of the population depending on their food security situation.

The prevalence of undernutrition in low and middle-income countries is high. Undernutrition leads to susceptibility to preventable infectious diseases and has an indirect association with the leading causes of death in children. According to UN estimates, 25 per cent of children less than five years of age were stunted in the year 2012.

In order to address this it is essential to identify which interventions have the greatest potential to improve growth and prevent undernutrition. This Research Summary presents the findings from a systematic review on complementary feeding strategies. The review analysed the impact of two strategies: education on complementary feeding and provision of complementary food, with or without education, on the prevention of stunting in children under-two years of age in developing countries from the period 1990 to 2012.

Interventions to treat undernutrition were not included in the review since the focus was on strategies to prevent undernutrition. Likewise, studies with seasonal variation; those in which children were provided with supplementary foods; and where the intervention was given for less than six months, were not included on the grounds that appreciable growth improvement takes at least this amount of time.

### Results

The review included meta-analysis of 11 randomised control trials (RCTs) (n = 3546) and seven non-RCT and Programme studies (n = 3118) in low and middle income countries. Previous reviews have been largely qualitative in nature and did not develop robust meta-analysis (statistically combining multiple studies of a similar nature) based on impact estimates.

Of the 18 studies, ten were identified where the intervention group had received education on complementary feeding only, and eight had complementary feeding combined with or without nutritional education as the intervention.

Based on the meta-analysis of evidence from randomised controlled trials including nearly 1500 children, the review suggests that provision of education on complementary feeding practices has the potential to significantly improve child growth. Nutritional education alone had a significant impact on height-for-age (HAZ) scores [standard mean difference (SMD) 0.22; 95 per cent confidence interval (CI): 0.08, 0.37], stunting [(relative risk – RR) 0.72; 95 per cent CI: 0.57, 0.93], and weight-for-age (WAZ) scores [SMD 0.20; 95 per cent CI: 0.07, 0.33]. On the other hand, complementary feeding with or

### Complementary Feeding

The transition from exclusive breastfeeding to family foods – referred to as complementary feeding – typically covers the period from 6–24 months of age. This is a critical period of growth.  
(World Health Organization)

« Education on complementary feeding for food insecure populations should be combined with adequate and affordable complementary foods. »

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without education had a non-significant impact on HAZ scores [SMD 0.46; 95 per cent CI: -0.24, 1.17], and WAZ [SMD 0.15; 95 per cent CI: -0.09, 0.40].

Based on the meta-analyses from randomised and non-randomised trials, the review suggests that education on complementary feeding alone had a significant impact on height-for-age (HAZ) scores [SMD 0.23; 95 per cent CI: 0.09, 0.36], stunting [(RR) 0.71; 95 per cent CI: 0.56, 0.91], and weight-for-age (WAZ) scores [SMD 0.16; 95 per cent CI: 0.05, 0.27]. Similarly, complementary feeding with or without education also displayed a significant impact on HAZ scores [SMD 0.39; 95 per cent CI: 0.05, 0.73].

The review is unable to conclude which types of foods are the most effective in preventing undernutrition because of the few studies in each subtype. The review did find that these interventions had a significant impact on reducing the prevalence of respiratory illness, but made no difference on fever and diarrhoea episodes.

## Key findings

- The scarcity of large and high quality studies and the variety in complementary feeding interventions make it difficult to determine one particular type of complementary feeding intervention as

the most effective. Moreover, the variation in the reported outcomes amongst studies makes it difficult to compare them.

- Education on complementary feeding for food insecure populations should be combined with adequate and affordable complementary foods.

## Further research

Further high quality trials particularly are required to assess the impact of such interventions on growth and morbidity outcomes. It is hoped that the several large studies that are currently underway will be able to provide robust evidence in order to accurately assess which interventions, if scaled up, can be effective.

Future studies should:

- Feature interventions that are provided for a minimum of six months duration since anthropometric improvements are gradual;
- Use standardised types of food at the intervention so that evidence can be formulated on which type of food is most effective in different settings;
- Report consistent outcomes and include morbidity outcomes;
- Systematically collect information on other health outcomes such as gastrointestinal and respiratory illnesses.

## Further reading

Zohra S. Lassi, GuleShehwar Zahid and Jai K. Das, Zulfiqar A. Bhutta. (2012) *Systematic review of complementary feeding interventions for prevention of undernutrition among children less than 2 years of age*

Imdad A; Yakoob MY and Bhutta Z. Impact of maternal education about complementary feeding and provision of complementary foods on child growth in developing countries. (2011) *BMC Public Health;11(Suppl 3):S25*

Dewey KG and Adu-Afarwah S. Systematic review of the efficacy and effectiveness of complementary feeding interventions in developing countries. (2008) *Matern Child Nutr;4 (Suppl 1):24-85*

## Credits

This MQSUN Briefing was written by **Guleshehwar Zahid** and **Zohra S. Lassi** under the supervision of **Zulfiqar A. Bhutta**. It is based on the paper by **Zohra S. Lassi, Guleshehwar Zahid, Jai K. Das** and **Zulfiqar A. Bhutta**, *Systematic review of complementary feeding interventions for prevention of undernutrition among children less than 2 years of age* (2013).

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